Craighead Environmental Research Institute

Monthly Progress Report: September, 2007

for the Montana Department of Transportation and Western Transportation Institute

Bozeman Pass Wildlife Monitoring
MSU banner number 425539

1 September 2007 –30 September 2007

This is a monthly progress report for September 2007 on the Bozeman Pass Post-Fencing Wildlife Monitoring subcontract: MSU banner number 425539. This is a continuation of Task C of the Bozeman Pass Wildlife Channelization ITS Project which was extended with a subcontract addendum, extension and (the first of two) post-fencing monitoring work scope(s) for CERI to continue their wildlife monitoring field data collection efforts. This addendum covers a limited work scope for one (of two related) contract(s) between WTI and MDT (MSU banner number 425539). It was anticipated that the funds in this account/contract would support CERI in their work through approximately May 2007. A subsequent subcontract associated with the second, related contract (MSU banner number 426899) between MDT and WTI was established for CERI to complete monitoring and evaluation efforts. Ultimately, data produced from both contracts/subcontracts will be merged and analyzed to address the research questions related to wildlife-vehicle collisions and wildlife movements under I-90.

This report was prepared by staff at the Craighead Environmental Research Institute (CERI) for the Montana Department of Transportation and Western Transportation Institute as part of the Bozeman Pass Wildlife Channelization ITS Project.

The objective of Task C (MSU Office of Sponsored Programs subcontract GC200-03-Z3137) is to collect, manage, and analyze field data on wildlife traffic victims and wildlife movements on and near I-90 on Bozeman Pass in order to evaluate the effectiveness of wildlife mitigation techniques applied in this area. The Craighead Environmental Research Institute (CERI) oversees the wildlife monitoring aspects of this project. This task includes oversight of :

- Road-kill data collection and data management;
- MRL overpass monitoring including
  - Behavioral observation sessions of animal-road crossing events
  - Collecting tracking event data from track bed/plate(s)
- Maintaining remote motion/heat-triggered still film cameras at existing culverts
- Supervise field technicians with data collection protocols and quality control;
- Data analysis of road-kill and behavioral crossing data;
- Develop GIS maps and analyses;
- Prepare monthly, quarterly and annual reports and publications.

Task 1: Road Kill Surveys during September 2007

Road kill surveys were conducted between Bozeman and Jackson Creek. Surveys were conducted on both sides of I-90 from Bozeman to Jackson Creek and back for a total of 22 miles round trip and an estimated 1 hour of labor per survey. CERI personnel recorded road-kill on approximately a three-times-weekly basis. Documenting animal-vehicle collisions will continue through June 2010 during the post-construction phase. Because of some close calls with traffic while stopped on the shoulder during road kill surveys and camera installation, we purchased two emergency flashing lights for our vehicles.

Twelve (12) road-kill surveys were driven during September of 2007. Four (4) of those recorded no new road-kill. At 22 miles per survey this equals 264 miles driven in September. Previously data had been collected for a 50 mile stretch (both lanes of Interstate 90 for 25 miles each way between Bozeman and Livingston. This survey effort was reduced to 22 miles for the monitoring subcontract but CERI has continued to survey the entire highway segment and is supplementing the survey budget with funding from other sources. Totals of animals killed by species were:

Bozeman Pass Roadkill Totals	**September**
Species	**Number**
Badger	0
Beaver	0
Bird Spp.	2
Black Bear	0
Cowbird	0
Coyote	0
Deer species	2
Dog	0
Domestic cat	1
Elk	0
Gopher Snake	0
Gray Partridge (Hun)	1
Great Blue Heron	0
Great Horned Owl	1
Ground Squirrel	0
Grouse	0
Magpie	2
Mallard	0
Marmot	0
Meadowlark	0
Mink	0
Mule Deer	3

Pheasant	0
Porcupine	2
Rabbit	0
Raccoon	4
Rattlesnake	0
Red Fox	1
Skunk	2
Small mammal spp.	0
Weasel	0
White Tail Deer	1

Task 2: Track bed monitoring at the MRL Bridge in September 2007

Deer have been the main users of the underpass. Deer use has been summarized by number of crossings per day whenever possible. This metric will allow comparisons to be made between seasons and to compare rates of crossing before the fencing and bridge re-build with rates after construction. Sand track beds at MRL bridge are to be monitored for wildlife tracks as an index of movements under the interstate every other week from the time the track beds have thawed and can accept tracks of passing animals (i.e., ~April) through June 2010 for a total of 14 sampling sessions per year. Each sampling session will include visiting the track beds 5 days in a row (i.e., rake on day 0, record tracks on day 1, day 2, day 3 and day 4) for a total of about 70 track bed site visits per year. Mileage expenses are included for days when no road kill surveys are scheduled (e.g., Tuesdays and Thursdays of sampling weeks).

Completion of the track bed was finally accomplished on 20 June, 2007. During July there was still some heavy equipment using the area occasionally until about 27 July when the temporary vehicle crossing over the MRL rails was finally removed. The track bed was restored at the end of July and track bed surveys began in early August. Three track bed sessions were completed in August. Two track bed sampling sessions were completed in September with a total of 8 track bed counts. Deer were the only larger mammals recorded. Smaller mammals included rabbits, birds, and a domestic cat. Horse tracks were also observed but not during monitoring sessions.

Task 3: Photo monitoring at fence ends through September 2007

3 of 4 remote-trigger IR flash (invisible to passing drivers) digital cameras were placed at the 4 termini of the wildlife fencing. Monitoring will occur year-round. Camera setup (including equipment purchases and theft-proofing) took about 5 hours initially. Data downloading will occur in conjunction with MRL track bed visits but cameras do not have to be checked as frequently as the track beds are checked. CERI installed most of the cameras on June 13. Two were mounted near the fence ends at the East end of the project. One was mounted underneath the I-90 bridge over Bear Canyon Road. WTI has provided CERI with 4 Reconyx digital IR flash cameras with battery holders at no cost for CERI's use throughout the three-year monitoring effort. Additional

budget has been included in this task for CERI to purchase additional necessary accessories.

Biologist Eric Atkinson observed a mountain lion crossing I-90 at the east end of the fence on 3 July at 2150. It was unclear from his description whether the lion passed in front of the remote camera. However, CERI personnel have passed in front of the camera at this location on at least one occasion when no photo was taken: despite the fact that the camera is set on the most sensitive setting. Further tests of the camera have been conducted: every time that the fence-end track-beds are examined which indicate that the camera is not completely reliable in recording moving animals at the fence ends.

No animals were recorded by the SE fence-end camera although about 80 photos were taken: it appears that the camera was triggered by late afternoon sun shining into the sensor. The NE fence-end camera recorded three white-tailed deer, one rabbit, and many mice during September. On three occasions it recorded CERI personnel examining the track bed.

Task 4: Infrared counter monitoring at jump-outs through September 2007

Fine-tuning the jump-out counters has proven to be more problematical than the cameras. Even at lowest sensitivities the Trailmaster sensors are often triggered by false events. Adjustment of counter sensitivity settings continued throughout September: although the sensors needs were masked with tape to narrow the window through which events are sensed many spurious events are recorded. The one sensor facing north which is not struck by sunlight is the only one that has very few false counts; however it often fails to register when an observer walks in front of it.

Task 5: Track bed monitoring at fence ends, jump-outs through September 2007

Track beds are used to verify data collected on remote cameras and counters in case those systems fail or prove unreliable. Species identification from track beds will complement counter data at jump-outs. A total of 8 sand track beds (4 on top of and 4 at the bottom or exit of the 4 jump-outs), were planned to be monitored on the same schedule as the track bed at the MRL bridge (see task 2); i.e., from the time the track beds have thawed and can accept tracks of passing animals (i.e., ~April) through April 2010. Initially it was decided that track beds were only needed at the top of each jump-out and those were constructed in June and July. Improvements in track beds totaling an additional 12 man-hours continued in August. Each sampling session will include visiting the track beds 5 days in a row (i.e., rake on day 0, record tracks on day 1, day 2, day 3 and day 4. Mileage expenses are covered in task 2. No animal tracks were recorded at jump-outs in August, and preparation of the track beds continued throughout the month. Track beds at the bottom of the jump-outs should provide useful information on animals entering or leaving through the space between the fence and the jump-out wall; coyotes, raccoons, and other animals may enter inside the wildlife fence through this gap. One of these track beds (at the SE jump-out) was constructed in September.

Black bear tracks were observed at the NE jump-out that were left sometime between August 31 and September 9. It appeared that the black bear either climbed up the cement jump-out wall, or climbed up the slope along the side of the jump-out inside

the fence and along the top of the cement wall before stepping onto the track bed and leaving tracks that headed toward the highway. The black bear did not exit through the jump-out opening and must have found another way to get out of the fenced area. It is possible that the bear could have climbed over the fence to get out.

Task 6: Photo monitoring of culverts September 2007

Two infrared remote-trigger cameras are used in the double culverts at the eastern fence ends; these below-grade culvert movement data will be combined with data from at-grade fence end-runs to assess total movement in that area. CERI installed one of the cameras on June 13. The second camera was installed on July 24.

Theft-proofing of the culvert cameras is accomplished by placing the cameras on the roof of the culvert about 12 feet above the water. A large extension ladder was used. In August existing holes with bolts in the culvert were used to secure the camera with a cable and lock. Neither of the culvert cameras were downloaded in September.

Task 8: Data Management & Reporting in September 2007

Data is entered, cleaned and archived by CERI. Data is managed in a manner that will allow for CERI and WTI to analyze and report final results as a team (e.g., keys for spreadsheet headers and other relevant notes will be included in data files).
CERI will send brief monthly reports with associated monthly invoices to WTI describing their efforts for that month including a summary of the data collected, equipment purchases or malfunctions (including any thefts of equipment) and any anticipated absences or difficulties with accomplishing tasks. Data entry and summary required two hours during September.

Discussion

Supplies and labor for the various tasks budgeted under this project have differed somewhat from the original proposal. Overall, however, the amounts budgeted are close to the amounts required. Total supplies were estimated to cost $2622.50. To date we have spent $2500.45. Total labor for construction and installation was estimated to cost $2880 and require 96 man-hours. To date 46 man-hours have been required costing $1380.00. Additional labor will be required to complete track beds at the bottom of jump-outs and to maintain and improve existing trackbeds, camera installations, and infrared counters through the next 3 years of the project.

After a month of trackbed surveys it is too early to tell if there is more use of the underpass than there was before the fencing was installed.

During September a final invoice for MSU Research SubContract Number GC301-04-Z3778 was submitted to WTI. This should terminate that subcontract and future expenditures will be covered by other subsequent subcontract.